CAMBRIDGE
International Education

Cambridge IGCSE™

ENVIRONMENTAL MANAGEMENT **0680/13**

Paper 1 Theory **May/June 2026**

MARK SCHEME

Maximum Mark: 80

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **17** printed pages.

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[Turn over

General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	<u>'List rule' guidance</u> For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

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6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
	correct point or mark awarded
	incorrect point or mark not awarded
	information missing or insufficient for credit
	incorrect or insufficient point ignored while marking the rest of the response
	contradiction in response, mark not awarded
	benefit of the doubt given
	error carried forward applied
	First answer
	response has not answered question
	power of ten error

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Annotation	Meaning
SEEN	point has been noted, but no credit has been given or blank page seen
TV	response is too vague or there is insufficient detail in response
REP	repetition in response
	to show a correct point but where the number of points does not relate to the number of marks i.e. 3 correct = 2 marks
1	correct awarding one mark from marking point or marking group 1. similar numbered ticks are used for marking point or marking groups 2, 3, 4 etc.
Highlighter	Highlight

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Mark Scheme Abbreviations

Abbreviation	Meaning
;	separates marking points
/	alternative responses for the same marking point
R	reject the response
A	accept the response
I	ignore the response
ecf	error carried forward
AVP	any valid point
ora	or reverse argument
AW	alternative wording
underline	actual word given must be used by candidate (grammatical variants excepted)
( )	the word / phrase in brackets is not required but sets the context
max	indicates the maximum number of marks that can be given
M1, **M2**….	marking point reference

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Question	Answer	Marks	Guidance
1(a)	*any two from:* M1 mostly north of the Equator ; M2 in every continent ; M3 in stated country / continent ;	**2**	**ignore** above or below M2 **accept** scattered across the world M3 **accept** most of Central America / very little in Australia M4 **allow** mainly found in desert regions
1(b)	*any three from:* M1 reduces soil fertility ; M2 topsoil removed ; M3 plants/seeds will not grow ; M4 crops die/crop failure / reduced crop yield ; M5 no food for livestock / livestock die ; M6 food shortages ;	**3**	M1 **accept** loss of minerals / nutrients M2 **accept** cause desertification M6 **accept** food insecurity / no food / increase in food prices
1(c)(i)	*any two from:* M1 light controlled ; M2 temperature controlled ; M3 water / irrigation controlled ; M4 nutrients controlled ; M5 humidity controlled ; M6 reduces pests / disease ; M7 increase yields / can harvest more than once / longer growing season ;	**2**	**ignore** easier to monitor / care for **ignore** more sunlight **accept ORA** for outside greenhouse M6 **accept** pathogens or named pest / disease M7 **accept** less space taken **allow** controlled condition if no named condition is mentioned.
1(c)(ii)	*any two from:* M1 plants grown using water ; M2 does not use soil ; M3 nutrients dissolved in water ;	**2**	**ignore** irrigation

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Question	Answer	Marks	Guidance
2(a)	M1 5.4 AND 2.7 ; M2 2.7 ;	**2**	correct answer = 2 marks M2 ecf on **M1**
2(b)	contraception use increases as number of children born decreases ;	**1**	**ignore** correlated **accept ORA** **accept** inverse relationship
2(c)	M1 bars plotted at: 25–29 = 310 000 **AND** 30–34 = 270 000 ; M2 bars of equal width **AND** distance between each bar equal ;	**2**	**ignore** shading

Question	Answer	Marks	Guidance
3(a)	**A**: evaporation ; **B**: through flow ;	**2**	**Reject** B: ground water flow **ignore** infiltration / surface run-off / run-off
3(b)(i)	50 ;	**1**	
3(b)(ii)	key completed in this order: soil lakes swamps rivers atmosphere all correct = 1 mark	**1**	
3(b)(iii)	*any two from:* M1 ice sheets ; M2 glaciers ; M3 ground water ;	**2**	**reject** oceans / sea **ignore** soil, lakes, swamps, rivers, atmosphere **ignore** streams **ignore** underground **ignore** rain M2 **accept** permafrost / icebergs M3 **accept** springs / aquifers

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Question	Answer	Marks	Guidance
4(a)	*any two from:* M1 (floating/physical) barrier ; M2 slows the spread oil ; M3 contains oil / keeps oil in one area ;	2	**reject** it catches the oil M3 **accept** trap the oil / reduced area of spill
4(b)	*any two from:* M1 delayed response in dealing with oil spill ; M2 quantity of oil spill too large or spread out / coastline / Singapore, too large to surround by booms ; M3 rough weather causes oil to wash over boom ; M4 some (heavy) oil sinks below the boom ;	2	M2 **ORA** booms too small M3 **accept** waves / currents / tides M5 **allow** poor quality boom design / damage to boom
4(c)	oil is toxic ;	1	**ignore** protects clothes **accept** harmful / poisonous / dangerous **accept** protects skin **accept** damages skin
4(d)	*any two from:* M1 (off-shore) extraction ; M2 leakage / poor maintenance of pipeline or ships / mechanical failure ; M3 shipping accident ; M4 cleaning tanks ; M5 deliberate action ;	2	M3 **accept** grounded / human error M5 **accept** illegal discharge M6 a**llow** natural disasters / extreme weather qualified e.g. hurricane, earthquakes, volcanic eruptions
4(e)	*any two from:* M1 double-hulled oil tankers ; M2 detergent sprays ; M3 skimmers ;	2	**accept** burning **accept** absorbents **accept** bioremediation

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Question	Answer	Marks	Guidance
4(f)(i)	M1 24.5 **AND** 9.5 / 61.2 ; M2 61 ;	**2**	correct answer = 2 marks M1 **accept** 15 / 24.5 M2 ecf awarded if incorrect values for **M1** identified and these values used to calculate the percentage difference **AND** answer expressed to 2 sig fig
4(f)(ii)	supports: oil spills have decreased ; does not support : only shows data for large spills / does not include information on spills less than 630 tonnes / last bar is only for 3 years or is not a 10 year period ;	**2**	**allow** relevant quoted data

Question	Answer	Marks	Guidance
5(a)(i)	Oceania ;	**1**	
5(a)(ii)	Asia ;	**1**	
5(a)(iii)	360 000 ;	**1**	**accept** 350 000 to 370 000
5(a)(iv)	*any one from:* M1 people live in remote areas ; M2 no access to medical facilities ; M3 cholera not diagnosed ;	**1**	**ignore** cultural remedies / self-medicate M2 **accept** cost of medical treatment M4 **allow** no family members to report death or illness M5 **allow** cultural stigma M6 **allow** no symptoms seen / asymptomatic
5(b)(i)	*any one from:* reservoirs ; lake ;	**1**	**ignore** rainwater harvesting / rivers / wells **allow** water barges / water towers / dam / tanks

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Question	Answer	Marks	Guidance
5(b)(ii)	malaria / bacteria / named disease ;	**1**	**ignore** flooding / cholera **allow** drowning **allow** pathogens / parasites **allow** algal growth **allow** water pollution / named contaminants /faeces
5(b)(iii)	provides water in times of drought or water shortage ;	**1**	**Ignore** emergency unqualified **allow** natural disasters **allow** provides water security
5(b)(iv)	to remove, particles / solids / named solid e.g. soil or rocks ;	**1**	**ignore** molecules
5(b)(v)	chlorination / addition of chlorine ;	**1**	**Ignore** chemicals **allow** boiling / UV / ozone / addition iodine
5(b)(vi)	*any two from:* M1 less money (to invest in distribution) ; M2 less infrastructure ; M3 less expertise / technology ; M4 people live in remote areas ;	**2**	**ignore** cost/expensive unqualified M1 **accept** poor maintenance M2 **accept** named examples e.g. pipes, treatment works M3 **accept** low skilled workers

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td>6(a)</td><td>any five from:
M1 decrease in biodiversity / extinctions ;
M2 loss of, shelter / habitat / shade ;
M3 loss of food / food chains disrupted ;
M4 reduction in genetic diversity ;
M5 loss of carbon sinks or stores ;
M6 less photosynthesis / less carbon dioxide removed from atmosphere ;
M7 increase risk of flooding ;
M8 increase risk of soil erosion ;
M9 loss of (potential) medicines or stated resource ;</td><td>5</td><td>M4 accept genetic depletion

M10 allow visual pollution
M11 allow less interception</td></tr>
<tr><td>6(b)</td><td>M1 labelled axes: y-axis area of forest lost / million hectares AND x-axis year ;
M2 suitable linear scale that allows for plotted points to cover at least half the grid ;
M3 5 correct plots;
M4 plotted points joined point to point with a ruled straight line ;</td><td>4</td><td>M1 allow axes reversed
M2 allow y-axis scale that does not start at 0
M3 ± ½ small square tolerance
M2 M3 not non-linear scales
M3 M4 not bar chart
M4 not line extrapolated before 2019 or after 2023
M4 not curve of best fit
M4 ecf on their plot

<table><tr><th>year</th><th>area of forest lost / million hectares</th></tr><tr><td>2019</td><td>1.9</td></tr><tr><td>2020</td><td>2.8</td></tr><tr><td>2021</td><td>1.7</td></tr><tr><td>2022</td><td>2.1</td></tr><tr><td>2023</td><td>0.9</td></tr></table></td></tr>
</table>

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Question	Answer	Marks	Guidance
6(c)	*any three from:* M1 timber extraction / logging ; M2 farming / agriculture ; M3 settlements / house building ; M4 roads / infrastructure ; M5 mineral extraction ;	3	**ignore** pests / diseases **ignore** population growth M1 **accept** demand for wood M3 **accept** urbanisation M6 **allow** wildfires / forest fires M7 **allow** climate change / global warming
6(d)	M1 the width of the bar represents the numbers of organisms / number of organisms at each trophic level ; *any three from:* M2 oak tree is producer ; M3 aphid / beetle / sparrow, are consumers ; M4 aphid is, primary (consumer) ; M5 beetle is, secondary (consumer) ; M6 sparrow is, tertiary (consumer) / top predator ; M7 there are four trophic levels / named organism at specified trophic level ;	4	**ignore** flow of energy M1 **accept** length for width M4 **accept** herbivore M5 **accept** carnivore M6 **accept** apex carnivore M8 **allow** 1 mark for comparison of numbers.
6(e)	*any three from:* M1 temperature ; M2 humidity ; M3 water ; M4 oxygen ; M6 carbon dioxide ; M7 salinity ; M8 sunlight ; M9 pH ;	3	M8 **accept** light M10 **allow** wind (speed) M11 **allow** mineral ions

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Question	Answer	Marks	Guidance
7(a)	*any two from:* M1 overall decreasing ; M2 fluctuations ; M3 levels off ;	**2**	M2 **accept** descriptions of fluctuations
7(b)	CFC / chlorofluorocarbons (in the atmosphere) ;	**1**	**allow** other **correct** examples. e.g. chlorine / hydrochlorofluorocarbons / HCFCs / carbon tetrachloride / CCl_4 / HBFCs / hydrobromofluorocarbons
7(c)	M1 higher levels of UV (radiation) reach Earth's surface ; M2 damage to vegetation ; M3 cancer ; M4 cataract ;	**4**	**ignore** harms **ignore** vegetation loss / death of plants **ignore** skin burns M5 **allow** DNA mutations
7(d)	M1 all countries produced or used, ozone depleting substances or CFCs ; M2 ozone layer depletion affects all countries / no boundaries in atmosphere ;	**2**	
7(e)	*any two from:* M1 idea that it does not deal with the cause or source of pollution ; M2 rich can pay to pollute ; M3 unfairly impacts LEDCs ;	**2**	M2 **accept ORA** M4 **allow** prices of goods / services may increase M5 **allow** difficulty enforcing M6 allow idea that some people think that some processes should be exempt from taxation

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Question	Answer	Marks	Guidance
7(f)	*Level of response marked question:* Level 3 [5–6 marks] **A coherent response is given that develops and supports the candidate's conclusion using relevant details and examples.** Indicative content and subject-specific vocabulary are generally used precisely and accurately. Good responses are likely to present a balanced evaluation of the statement. Level 2 [3–4 marks] **Development and support of the conclusion is evident, though the response may lack some coherence and / or detail.** Irrelevant detail may be present. Indicative content and subject-specific vocabulary are used but may lack some precision and / or accuracy. Responses contain evaluation of the statement, but this may not be balanced. Level 1 [1–2 marks] **The response may be limited in development and / or support.** Contradictions and / or irrelevant detail may be present. Indicative content and subject-specific vocabulary may be limited or absent. Responses may lack structure or be in the form of a list. Evaluation may be limited or absent.	**6**	

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Question	Answer	Marks	Guidance
7(f)	No response or no creditable response [0 marks] *indicative content for:* The impacts of acid rain will no longer be a problem when all cars are powered by electricity. *discussion of causes of acid rain:* from combustion of fossil fuels that contain sulfur impurities reaction with nitrogen in the air in the high temperatures of a car engine reaction with oxygen to form SO_2 and Nox SO_2 and NOx reaction with water to form sulfuric acid and nitric acid *discussion of how electric vehicles will reduce the emissions* transport sector one of largest contributors of pollutants that cause acid rain electric vehicles do not produce pollutants that cause acid rain there are vehicles other than cars e.g. motorbikes, truck *understanding that cars are only one source of pollutants that cause acid rain* industry combusts fossil fuels electricity for electric cars may be produced from fossil fuels electric cars are too expensive for many people will take many years for electric cars to be widely used *discussion of ways acid rain can be controlled:* catalytic converters flue-gas desulfurisation legislation and international agreement		

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